February 2001

Canada

Canada is a net exporter of oil, natural gas, coal, uranium, and hydropower. It is one of the most important sources of U.S. energy imports.

Note: Information contained in this report is the best available as of February 2001 and can change.

BACKGROUND

Canada currently has a bright economic outlook, with projected gross domestic product (GDP) growth of 3.2% in 2001. Liberal Prime Minister Jean Chretien won his re-election bid in November 2000, enlarging his party's majority in the parliament. Chretien plans to reduce taxes, which is expected to lead to increased consumer spending and business confidence. Unemployment is at historic lows.

Canada is a significant energy exporter, and part of the current Canadian economic boom results from high world energy prices. In the first three quarters of 2000, energy accounted for almost two-thirds of Canada's large trade surplus. Canada is one of the few highly industrialized economies that benefits from higher world oil and other energy prices. However, revenues flow mostly into the energy-rich province of Alberta, while the average Canadian consumer pays higher energy prices. Population density is much higher in eastern Canada, with Ontario accounting for one-third of Canada's total population, whereas most energy production occurs in the western provinces. Canada is one of the industrialized world's most trade-dependent countries. Fellow North American Free Trade Agreement (NAFTA) member the United States is Canada's most important trade partner, followed by Japan and the major European Union countries. The effects of an economic slowdown in the U.S. would be felt in Canada.

ENERGY OVERVIEW

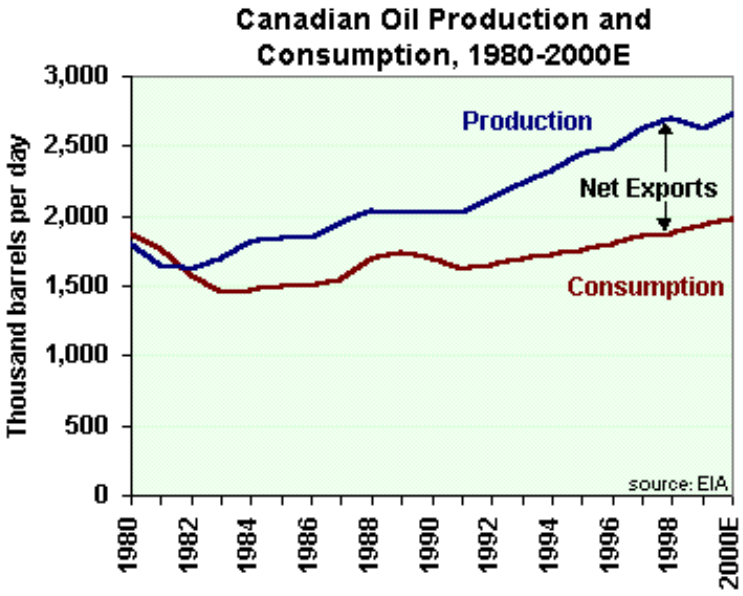
Canada was the fifth-largest energy producer in the world in 1999, behind the United States, Russia, China, and Saudi Arabia. Over the past two decades, Canada has become a significant net energy exporter. In 1999, about 30% of Canadian energy production was exported, with the United States by far the main customer. January-November 2000, the United States imported more oil (including crude oil and petroleum products) from Canada than from any other country. The United States also consumes large amounts of Canadian natural gas, which accounted for 94% of U.S. gas imports and 14% of U.S. gas consumption in the first half of 2000. In 1999, about 36% of Canada's primary energy production was natural gas, followed by oil (23%), hydropower (20%), coal (11%), and nuclear power (4%). About two-thirds of Canada's energy is produced in the province of Alberta.

Canada also is a significant energy consumer and a member of the International Energy Agency (IEA). It was the world's sixth-largest energy consumer in 1999, roughly on par with total energy consumption in India.

The Canadian energy industry is undergoing a period of reorganization, with consolidation in the oil and gas sectors and privatization in the electricity sector. While geography inhibits the development of a national electricity market within Canada, there is significant trade with the United States and potential for strong north-south regional markets, involving several Canadian provinces and adjacent U.S. states.

OIL

Canada has proven oil reserves of 4.7 billion barrels, as of January 2001. Oil production averaged 2.7 million barrels per day (bbl/d) during the first eleven months of 2000, with estimated consumption of 2.0 million bbl/d. Alberta, in western Canada, is by far the country's leading oil producer, accounting for almost 60% of Canadian oil production in 1999. However, the province now faces decreasing reserves. Meanwhile, projects and potential projects in other provinces are shifting the oil industry focus to include the eastern and northern parts of the country.



Canada is a major source of U.S. oil imports. From January through November 2000, the United States imported 1.7 million bbl/d from Canada, of which 1.3 million bbl/d was crude oil, making Canada the top

supplier of U.S. oil imports and the third-largest supplier of crude oil imports (behind Saudi Arabia and Mexico, and just ahead of Venezuela).

The Canadian oil industry is in the midst of consolidation, reducing the number of active companies. The largest companies operating in Canada are Exxon's Imperial Oil, Royal Dutch/Shell's Shell Canada, Petro-Canada, and Suncor. Mobil also is active in Canada, and there are no plans to merge ExxonMobil's Canadian affiliates.

Exploration and Production

There has been considerable exploration activity throughout Canada, not just in the traditional producing province of Alberta. In remote northwestern Canada, parts of the Mackenzie Delta and Beaufort Sea will be explored by: Anderson Exploration and Petro-Canada (jointly); Shell Canada; BP Canada Energy, Burlington Resources, and Chevron Canada Resources (jointly); Anadarko Canada; and EOG Resources Canada. On the west coast, a provincial British Columbia agency plans to review a 28-year-old ban on exploration in the Pacific Ocean. The area near Queen Charlotte Island is thought to hold as much as 8.9 billion barrels of oil as well as significant reserves of natural gas.

On the east coast, reserves in the Jeanne d'Arc Basin on the Grand Banks, offshore Newfoundland, have increased by 33% (536 million barrels) in the Hibernia, Hebron, and White Rose fields. The first project in the area, the Hibernia field, came onstream in 1997 and currently produces 150,000 bbl/d of light, sweet crude. ExxonMobil is the operator. The area's second project, Terra Nova, is running behind schedule and is now slated to be producing 130,000 bbl/d by 2002. Several times in 2000 and once again in 2001, operator Petro-Canada announced that the project is behind schedule and over budget. The White Rose field is expected to be the third Grand Banks development, beginning production in 2004, although there are concerns that development will be prohibitively expensive. Finally, the Hebron field could prove worthy of development.

Pipelines

Although most Canadian oil is produced in western Canada (Alberta), oil is consumed primarily in central and eastern Canada. As a result, Canada exports oil from Alberta and imports oil on the east coast, explaining why Canada exports 1.7 million bbl/d (gross) to the United States but has net exports of less than 1 million bbl/d. Furthermore, there is an extensive pipeline system to transport western oil to eastern Canadian and U.S. markets. There are two major pipeline networks. The first is Enbridge Pipelines Inc. (formerly Interprovincial Pipe Line-IPL), an 8,700-mile network of piping and terminals, delivering oil from Edmonton, east to Montreal and eastern Canada and the U.S. Great Lakes refineries and markets. It is one of the largest crude oil and petroleum liquids pipeline systems in the Western Hemisphere, and there are plans to expand its U.S. export capacity by 40,000 bbl/d by 2002. The other major pipeline system is the Trans Mountain Pipe Line (TMPL), which delivers oil mainly from Alberta west to refineries and terminals in the Vancouver area, as well as to the Puget Sound area of Washington state.

Synthetic Crude Oil

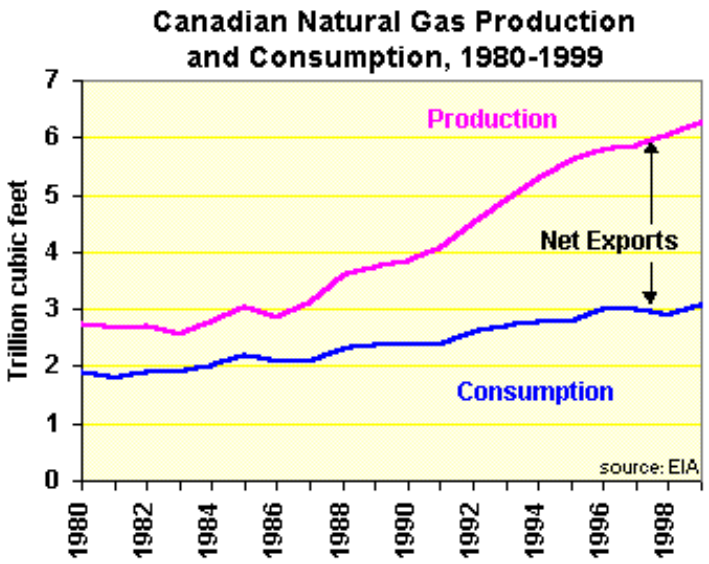
Much of the exploration in Alberta in coming years likely will be for heavy crude and oil sands, as conventional oil reserves are being depleted. Unlike conventional oil, oil sands are a mixture of bitumen, sand, water and clay. The bitumen, a thick and tar-like hydrocarbon, surrounds the sand and water. To develop oil sands, bitumen is separated from the sand, water and clay. Once separated, bitumen can be upgraded into a high-quality oil called "synthetic crude." Operating costs with current technology stand at $8/bbl, according to press reports, although companies are targeting $6/bbl to $7/bbl for new projects.

The Athabasca Oil Sands deposit, in northern Alberta, is one of the two largest oil sands deposits in the world (the other is in the Orinoco Belt, Venezuela). There are also oil sands deposits on Melville Island, in the Canadian Arctic, and there are three smaller deposits in northern Alberta.

Current output of synthetic crude is estimated at 600,000 bbl/d. As much as $20 billion was invested in oil sands in 2000, as major producers Suncor and Syncrude expanded development and Koch and Shell

pursued new projects. Production by 2010 could increase to more than 1.8 million bbl/d, according to press reports.

NATURAL GAS



Canada holds about 61 trillion cubic feet (Tcf) of proven natural gas reserves, and additional reserves are thought to lie off the Canada's eastern coast between Newfoundland and Nova Scotia. Canada currently produces about 6.3 Tcf of natural gas per year, making it the world's third largest gas producer (after the United States and Russia) and second largest gas exporter (after Russia). Canada's gas exports go almost exclusively to the United States. Canadian gas consumption is projected to grow significantly in coming decades, largely for use in electricity generation. As natural gas production and infrastructure grow, there is a potential for emergence of a unified North American natural gas market.

Exploration and Production

Like the oil industry, Canada's natural gas industry is based primarily in Alberta, reaching into neighboring Saskatchewan, British Columbia, and the southern Northwest Territories. Saskatchewan is expected to become an increasingly important gas province in the coming years. Another important industry focal point is offshore Atlantic Canada. Nova Scotia's Sable Island reserves are estimated at 3.5 Tcf. Offshore Newfoundland is thought to hold as much as 18.8 Tcf between the Jeanne d'Arc Basin (home to the Hibernia oil project) and the Ridge Complex.

Sable Island Offshore Energy, a consortium led by Mobil Canada and including Shell Canada, Imperial Oil, Nova Scotia Resources and Mosbacher Operating, began production in January 2000. About 420 million cubic feet per day of natural gas is pumped from three reservoirs at Sable Island's Thebaud platform. The consortium reportedly is considering developing the second stage of the project, beginning with the currently untapped Alma field, located almost 40 miles southwest of Sable. It is unknown what production the stage two fields might yield, and production is not expected until between 2003 and 2007. Several companies, including Mobil, PanCanadian, and Marathon, currently are exploring for additional reserves in the waters off Nova Scotia.

The Arctic Northwest Territories and the Yukon are thought to hold great potential for new gas discoveries. While the territories are unlikely to exceed Alberta's production, as Alberta becomes increasingly mature the territories represent a major potential new source of gas. Calgary-based Berkley Petroleum, Chevron Canada, and Ranger Oil all have made discoveries in the Northwest Territories. The Mackenzie Delta area of the Northwest Territories holds an estimated 65 Tcf.

Pipelines

There has been considerable progress in recent years on gas interconnections between Canada and the United States (see map). The Northern Border Pipeline, an extension of the Nova Pipeline, came onstream in late 1999 and connects to Chicago through the upper Midwest. The Maritimes and Northeast Pipeline came onstream in January 2000, running from Sable Island to New England. The Alliance Pipeline is a $2.5-billion, 1,875-mile pipeline, the longest ever built in North America, and is designed to carry about 1.3 billion cubic feet per day (Bcf/d) of gas from western Canada (Fort St. John, British Columbia) to the Chicago area. The pipeline began commercial service on December 1, 2000. The U.S. utility Pacific Gas & Electric imports gas from British Columbia. The Millennium Pipeline remains in the regulatory approval

stage of development; it is slated to connect Canadian sources to southern New York and Pennsylvania.

Exploration and production activity in the Mackenzie Delta, Beaufort Sea, and Alaskan North Slope has sparked interest in an Arctic pipeline. Combined Alaskan and Canadian assets in the area stand at about 40 Tcf, with far more suspected reserves. Interest in an Arctic pipeline was first expressed in the 1970s, but low gas prices, high capital costs, loss of tax incentives for development, and extremely negative public opinion worked to shelve the project. However, higher gas prices, a growing gas market, and support from the indigenous communities that live in the region now have turned in favor of pipeline construction.

Imperial Oil, in cooperation with Gulf, Shell, and Mobil, is conducting a feasibility study on a pipeline for onshore Canadian Arctic gas to connect with northern Alberta's pipeline network. BP is considering a number of routes for both U.S. and Canadian Arctic gas, and has publicly stated intentions to be involved in pipeline construction. Westcoast Energy, TransCanada Pipelines, and Enbridge also have stated interest. Alternative pipeline routes for U.S. and Canadian Arctic gas under consideration include:

1. The Alaska Highway route (or Foothills route) would involve construction of a 1,674-mile pipeline from Prudhoe Bay (Alaskan Beaufort Sea) to pipeline connections in Fort St. John, British Columbia at an estimated cost of $6 billion. This route already has Canadian and American environmental and regulatory approval.
2. The Dempster Lateral would be a 745-mile pipeline from Inuvik, Northwest Territories, to the Alaska Highway line, through the Yukon, at a cost of $2 billion.
3. A 1,400-mile direct connection from Prudhoe Bay to the Mackenzie Delta, running south through the Mackenzie Valley, would cost about $8 billion.
4. A 583-mile connection from Prudhoe Bay through the Yukon and Northwest Territories, crossing Alaska's Yukon Flats Natural Wildlife reserve, connecting with a separate Mackenzie line, would cost about $1.5 billion.

Alaska, Yukon, and Northwest Territory governments all support different routes. Analysts estimate that an Arctic pipeline could be ready for delivery by 2007 at the earliest.

COAL

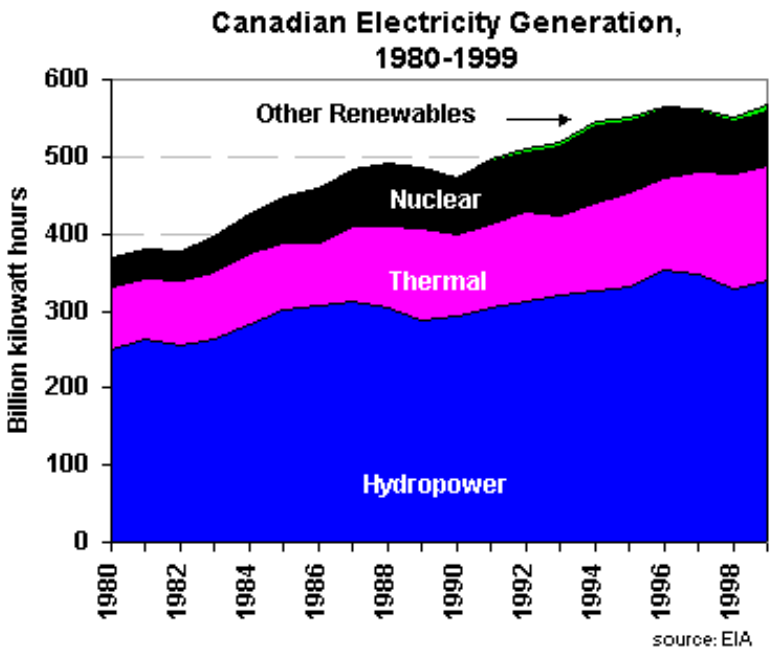
Canada is a major coal producer and consumer, with estimated 1999 output of 79.9 million short tons (Mmst), consumption of about 63.4 Mmst, and reserves at 9.5 billion short tons. About 80% of Canada's coal exports are metallurgical, with the vast majority purchased by Japan (60%) and South Korea (16%). Alberta accounts for about half of Canada's coal production, while British Columbia and Saskatchewan account for about 30% and 15%, respectively. Bituminous coal makes up about half of Canada's coal output, with sub-bituminous (about one-third) and lignite the rest. Canadian coal consumption is primarily (87%) for electricity generation, with the remainder mainly used for steel-making.

ELECTRICITY

Canadian electricity generation in 1999 totaled 567.2 billion kilowatt hours (bkwh), of which 60% was hydropower, 26% was conventional thermal power (oil, gas, and coal), 12% was nuclear generation, and 1% was derived from other renewable sources. Canada was the largest producer of hydropower in the world in 1999, and hydro sources are not yet believed to be fully exploited. Trends in coming years are expected to favor thermal power generation, mainly from natural gas. The Canadian nuclear power industry has declined to 69.8 bkwh in 1999 since its peak of 102.4 bkwh in 1994. Ontario contains the bulk of Canadian nuclear capacity.

Canada exported about 42.9 bkwh of electricity to the United States in 1999, mostly from Quebec, Ontario, and New Brunswick to New England and New York. Smaller volumes are exported from British Columbia

and Manitoba to Washington state, Minnesota, California, and Oregon. There is considerable reciprocity between the Canadian and U.S. power markets, as the United States also exports smaller volumes of electricity to Canada.



Natural gas-fired power plant construction is on the rise in Canada, preparing for a three-fold increase in gas power generation in the next decade, as predicted by the Canadian Energy Research Institute. PanCanadian Petroleum, TransAlta, EPCOR, and ATCO Power are all in various stages of developing new (mostly cogeneration) gas-fired plants in Alberta and Saskatchewan.

Under Canada's constitution, electricity is primarily within the jurisdiction of the provinces. In most provinces, the bulk of generation, transmission, and distribution is provided by a few dominant utilities. Although some of these utilities are privately owned, most are owned by the provinces. There is also limited independent power producer (IPP) generation, mostly for sales to the larger utilities.

Alberta and Ontario have introduced legislation to deregulate their power sectors. Alberta is much further along in the deregulation process. It was the first province to introduce privatization legislation in 1995, and a 1998 amendment to the original legislation allowed retail customers to choose their electricity suppliers beginning January 1, 2001. In August 2000, Alberta's government accepted bids totaling $740 million for retailers to sell output of many of Alberta's power plants through the Power Pool of Alberta to other entities or consumers. Ontario introduced privatization legislation in 1998, but deregulation originally scheduled for November 2000 now has been postponed indefinitely. Quebec and British Columbia do allow third party access to their electricity grids as the result of trade agreements with the United States, but neither province has plans to break up its utility monopoly.

ENVIRONMENT

Canada's energy abundance has encouraged the development of a highly fuel-intensive economy based on natural resource extraction and processing. This heavy reliance on energy-intensive industries has led to serious environmental concerns, primarily regarding air pollution and climate change.

In 1999, Canada consumed 12.5 quadrillion Btu of energy and emitted 150.9 million metric tons of carbon. The industrial sector was the primary emitter of carbon dioxide and within the sector, six energy intensive industries accounted for over 80% of these emissions. Per capita energy consumption ranks fourth among OECD countries, and per capita carbon emissions rank third.

Entering the 21st century, Canada is proving to be a leader in addressing environmental concerns. Renewable energy sources, such as wind, are beginning to gain more attention as Canada works toward meeting international obligations to reduce greenhouse gas emissions.

COUNTRY OVERVIEW

Prime Minister: Jean Chretien (since 11/4/93)
Independence: July 1, 1867 (from UK)

Population (July 2000E): 31.3 million
Location/Size: Northern North America/3.85 million sq. miles (slightly larger than the United States)
Administrative divisions: 10 provinces and 3 territories*; Alberta, British Columbia, Manitoba, New Brunswick, Newfoundland, Northwest Territories*, Nova Scotia, Nunavut*, Ontario, Prince Edward Island, Quebec, Saskatchewan, Yukon Territory*
Major Cities: Toronto, Montreal, Vancouver, Ottawa (capital), Edmonton, Calgary, Winnipeg, Quebec
Languages: English (official), French (official)
Ethnic Groups: British Isles origin (40%), French origin (27%), other European (20%), indigenous Indian, Eskimo (1.5%)
Religions: Roman Catholic (45%), Protestant (41%)
Defense (8/98): Army (20,900), Navy (9,000), Air Force (14,000), Other (15,700)

ECONOMIC OVERVIEW

Exchange Rate (2/21/01): $1 U.S. = $1.54032 Canadian dollar
Gross Domestic Product (GDP), (2000E, $U.S.): $691.8 billion
GDP Per Capita (2000E, $U.S.): $22,102
Real GDP Growth Rate (2000E): 5.0% **(2001F):** 3.2%
Inflation Rate (consumer prices, 2001F): 2.1%
Unemployment Rate (2001F): 6.7%
Current Account Balance (2001F, $U.S.): $7.6 billion
Merchandise Exports (2000E, $U.S.): $266.1 billion (of which, $28.4 billion were fuels)
Merchandise Imports (2000E, $U.S.): $234.3 billion
Major Export Products: Motor vehicles and parts, newsprint, wood pulp, timber, crude petroleum, machinery, natural gas, aluminum, telecommunications equipment, electricity
Major Import Products: Machinery and equipment, crude oil, chemicals, motor vehicles and parts, durable consumer goods, electricity
Major Trading Partners: United States, European Union

ENERGY OVERVIEW

Minister of Natural Resources & Wheat Board: Ralph Goodale
Crude Oil Reserves (1/1/01): 4.7 billion barrels
Oil Production (2000E): 2.7 million bbl/d, of which 2.0 million bbl/d was crude oil
Oil Consumption (2000E): 1.95 million bbl/d
U.S. Oil Imports from Canada (January-November 2000E): 1.67 million bbl/d (of which 1.28 million bbl/d was crude)
Natural Gas Reserves (1/1/01): 61.0 trillion cubic feet (Tcf)
Natural Gas Production (1999E): 6.3 Tcf
Natural Gas Consumption (1999E): 3.1 Tcf
Coal Reserves (12/31/96): 9.5 billion short tons
Coal Production (1999E): 79.9 million short tons (Mmst)
Coal Consumption (1999E): 63.4 Mmst
Electric Generation Capacity (1/1/99): 109.8 million kilowatts
Electricity Generation (1999E): 567.2 billion kilowatt hours (60% hydro, 26% thermal, 12% nuclear, 1% geothermal and other)

ENVIRONMENTAL OVERVIEW

Minister of Environment: David Anderson
Total Energy Consumption (1999E): 12.5 quadrillion Btu* (3.3% of world total energy consumption)
Energy-Related Carbon Emissions (1999E): 150.9 million metric tons of carbon (2.5% of world carbon emissions)
Per Capita Energy Consumption (1999E): 410.7 million Btu (vs U.S. value of 355.9 million Btu)
Per Capita Carbon Emissions (1999E): 4.9 metric tons of carbon (vs U.S. value of 5.6 metric tons of carbon)
Energy Intensity (1999E): 17,401 Btu/ $1990 (vs U.S. value of 12,638 Btu/ $1990)**
Carbon Intensity (1999E): 0.21 metric tons of carbon/thousand $1990 (vs U.S. value of 0.20 metric

tons/thousand $1990)**
Sectoral Share of Energy Consumption (1998E): Industrial (48.0%), Residential (17.7%), Transportation (18.9%), Commercial (15.5%)
Sectoral Share of Carbon Emissions (1998E): Industrial (40.3%), Transportation (33.0%), Residential (14.0%), Commercial (12.7%)
Fuel Share of Energy Consumption (1999E): Oil (30.4%), Natural Gas (25.3%), Coal (11.6%)
Fuel Share of Carbon Emissions (1999E): Oil (44.9%), Natural Gas (31.0%), Coal (24.1%)
Renewable Energy Consumption (1998E): 3,850 trillion Btu*
Number of People per Motor Vehicle (1998): 1.8 (vs U.S. value of 1.3)
Status in Climate Change Negotiations: Annex I country under the United Nations Framework Convention on Climate Change (ratified December 4th, 1992). Under the negotiated Kyoto Protocol (signed on April 29th, 1998, but not yet ratified), Canada has agreed to reduce greenhouse gases 6% below 1990 levels by the 2008-2012 commitment period.
Major Environmental Issues: Air pollution and resulting acid rain severely affecting lakes and damaging forests; metal smelting, coal-burning utilities, and vehicle emissions impacting on agricultural and forest productivity; ocean waters becoming contaminated due to agricultural, industrial, mining, and forestry activities
Major International Environmental Agreements: A party to Conventions on Air Pollution, Air Pollution-Nitrogen Oxides, Air Pollution-Sulphur 85, Air Pollution-Sulphur 94, Antarctic Treaty, Biodiversity, Climate Change, Desertification, Endangered Species, Environmental Modification, Hazardous Wastes, Marine Dumping, Nuclear Test Ban, Ozone Layer Protection, Ship Pollution, Tropical Timber 83, Tropical Timber 94, Wetlands and Whaling. Has signed, but not ratified, Air Pollution-Volatile Organic Compounds, Antarctic-Environmental Protocol, Law of the Sea and Marine Life Conservation

* The total energy consumption statistic includes petroleum, dry natural gas, coal, net hydro, nuclear, geothermal, solar, wind, wood and waste electric power. The renewable energy consumption statistic is based on International Energy Agency (IEA) data and includes hydropower, solar, wind, tide, geothermal, solid biomass and animal products, biomass gas and liquids, industrial and municipal wastes. Sectoral shares of energy consumption and carbon emissions are also based on IEA data.
**GDP based on EIA International Energy Annual 1999.

OIL and GAS INDUSTRIES
Organization: Generally private sector, although the Canadian government maintains a 20% share in Petro-Canada.
Major Oil and Gas Producing Provinces: Alberta; British Columbia; Saskatchewan
Major Oil Pipelines: Trans Mountain; Enbridge
Major Oil Refining Provinces (Capacity): Ontario (545,300 bbl/d); Alberta (397,600 bbl/d); Quebec (364,800 bbl/d); New Brunswick (237,500 bbl/d)
Major Gas Pipeline Companies: Enbridge, TransCanada PipeLines Ltd.

Sources for this report include: CIA World Factbook; Dow Jones News wire service; Economist Intelligence Unit ViewsWire; Financial Times; Oil and Gas Journal; Petroleum Economist; Petroleum Intelligence Weekly; U.S. Energy Information Administration; WEFA World Economic Outlook.

Links

For more information from EIA on Canada, please see:
EIA - Country Information on Canada
APEC: Energy Issues and Trends

Links to other U.S. Government sites:
U.S. Department of Energy on Electricity Trade and Canada

CIA World Factbook - Canada
U.S. Embassy in Canada
U.S. International Trade Administration, Country Commercial Guide - Canada
U.S. Department of Energy's Office of Fossil Energy's International section - Canada
U.S. Department of State Country Background Notes - Canada
U.S. Department of State Country Report on Economic Policy and Trade Practices

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Contact:

Tara Billingsley
tara.billingsley@eia.doe.gov
Phone: (202) 586-0172
Fax: (202) 586-9753

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